1: Petrullo E-3 (1933-34) 1939 SS19 Yaruro SS19

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a pole. In general, therefore, organized play for child or adult is hardly present.

WAR

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The Yaruros did not speak much of war. None of their legends make any reference to it except in one case which says that they were killed by the "Racionales" and that they retaliated.[6] The known historical sources say nothing except Father Gumilla's account, which makes reference to the pacification of the "Saruri."

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On the subject of conduct, the outlook on life and the organization of life values, we must distinguish between theory and practice. The former grows out of reflection and represents the intellectualization of the universe as seen without much reference to practical life. The second springs from the social and economic relationships and the fusing of individual ends and purposes into the purposes and ends of the group, whereas the first is not strictly controlled by custom and practical needs. Both exist among the [791] Yaruros. For the first we have to turn to the shaman, who in addition to being a religious leader, a savant, is also a moralist; and for the second we turn to the entire social group and need to watch it in its behavior.

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In reading over the early account of the aborigines of the region, among which we must presumably include Yaruros, we gather that their moral concepts were different from those of the Christians, but perhaps neither better nor worse in practice. It must be doubted, however, whether a number of practices attributed to the Yaruros are authentic. We read, for instance, that a number of the aborigines were patricides, and we are given a picture of the male children, on reaching adolescence, rising against the fathers [682] through lust for the mother. Patricide is an abhorrent crime and [683] the motive behind it is equally abhorrent. It is to be doubted whether patricide, or even lesser acts, such as beating the father, were ever practiced, except in sporadic cases such as may occur in [684] any society. It hardly seems possible that women were the cause of it when it is known, as it is known today, that mating and extramarital relationships are very strictly controlled by tradition and social training. Disregarding, therefore, such allusions to the moral life of the primitive peoples of the Orinoco, let us turn to our informants for an understanding of their present mode of life. The

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[6] It would appear probable that the nomadic Yaruros were too weak to ever develop any warlike spirit.

2:Leeds E-5 (1958)1961 SS19 Yaruro SS19

YARURO INCIPIENT TROPICAL FOREST HORTICULTURE

Possibilities and Limits

Anthony LEEDS

The immediate concern of the papers in this symposium is the interaction between human populations and their habitats through the agency of horticulture insofar as factors in this interaction result in the evolution of culture. The present paper discusses an Incipient Tropical Forest Slash-and-Burn Horticultural group, the Yaruro of the south-central Venezuelan llanos, in order to show what kinds of upper limits were set upon its development by its technology and habitat, or both, and what sorts of factors within the relatively limiting conditions of incipient tropical forest horticulture might have provided a foundation for evolution to a more developed state. For any of the cultures which are examples of this class of horticulturalists, slash-and-burn horticulture plays a considerable, but usually not, by itself, a dominating role in the total food procurement process. The Yaruro fall between the Incipient and Intermediate Tropical Forest types discussed in the introduction, whereas the Sirionó, for example, represent a culture near the lower limits of cultures of the type. Despite their somewhat more advanced condition, what pertains to the Yaruro, in a general way applies to the rest of the type.

We shall consider first the habitat conditions in which the Yaruro find themselves and then describe the major dimensions of their swidden horticultural technology. With these aspects of the total ecology before us we shall show how its characteristics provide us a model for our incipient tropical forest stage and at the same time demonstrate how its special ecological conditions inhibited its further evolution into the more advanced stages of horticulture.

The Venezuelan llanos stretch as a low inland plain from the Orinoco delta, W by WSW, 750-800 miles inland, to the edges of the Andes in the far west of Apure State and into Eastern Colombia. The Yaruro are found between 450 and 600 miles from the mouth of the Orinoco, but still inside Venezuelan frontiers. They are found on all the rivers from the Arauca to the Cinaruco, inclusive, a distance of about 90 miles from north to south.

[probably should read: which--Analyst]

121 harvesting it, require no centralized authority and render it possible and
182 even probable that the management of production or distribution be carried
433 on without it. The same may be said, on the whole, for all the hunting,
[241] fishing, and gathering harvests, a notable and probably permanent feature
[22] of Yaruro ecology. Perhaps the only crop which has a marked seasonality is corn, but its absolute size in the total production, its geographical distribution in production, and its position relative to all other harvests renders it insignificant as an effective promoter of managerial functions and
[56] formal arrangements of social stratification. It is unlikely, given Yaruro ecology that the forms of surplus would change; consequently their concomitants in social structure would remain constant.

On the basis of the formal characteristics of the ecology and of the surpluses one may deduce an essentially egalitarian social organization,
[56] with minimal ranking and leadership and with dispersion of the acts of
[462] economic distribution among a number of adult males or females any one of whom may produce a small harvest surplus at any time. With a relatively steady and reasonably comfortable total subsistence base, and with ecological arrangements which are spatially repeated in identical form up
182 and down river, no necessity exists for stringent rules of local exogamy
[582] as an institution to regulate the labor force by redistributing its members. One would expect frequent marrying in the village according to the convenience of the contractants, and out-marriages to occur either as ecoomic opportunity offered elsewhere or lack of women at home urged one out. The
[562] combined biological and productive role of women, with their particularly important technical roles in gathering and in food preparation, suggest sedentary communities and a matrifocal emphasis in the rules of residence. However, the importance and location of the man's economic contribution
[591] might be expected to balance this to a degree so that one might deduce male uxorimatrilocal residence but with other, subsidiary patterns. This in fact occurs, occasional male matrilocality or patrilocality [19]A comprising the subsidiary residence rules. Political authority would be vested
[623] in the community, mainly among its elders, since little or no ranking or stratification is to be expected. In fact, Yaruro socio-political forms, in general, conform to all of these deduced conditions. They represent a model for any society based on the kinds of ecological conditions or form of ecology we have described. Where the ecology is even more restricted the deduced characteristics should be matched even more closely by the observed
● [171] data. In this respect, the Sirionó, for example, tend to confirm the hypothesis, in that their partial sedentariness which revolves about horticulture is associated with matrifocal social organization: matrilocality and matrilateral cross-cousin marriage. They also possess autonomous local communities. [19]A The Apinayé also tend to confirm the hypothesis. [20]A

Where our analysis permits us to predict about the course of the ecological conditions, we should also be able to extend this prediction to the social structure. Since, under the given ecology, we can establish a maximum population for each Yaruro socio-cultural unit, and under the given technology we would expect no significant change in the ecology, no significant

[18,19,20 For footnotes see pp. 43-44 category 116 --Analyst]

represent his people to the outside world without consultation and to make arbitrary decisions for them inside the community — mainly in his own interest — was, with the consent of the community, assassinated by one of the members, now in excellent standing in that community as a respected shaman. The chief in question had stepped beyond the bounds designated for his status. In sum, the position of chief, even though formally recognized by Yaruro society and reinforced by formal recognition and appointment by Venezuelan authorities, is feeble as an institution and as a status.[8] It is our hypothesis that ecological conditions of Yaruro life determine the form of the chieftainship in such a way that its stronger institutionalization would be impossible, and we turn to this question now.

III

Yaruro subsistence activities[7] comprise swiddening, gathering, pig herding, hunting and fishing, mentioned in the order of their importance as contributors to the total food supply as measured in calories.[8] Horticulture probably provides 60—70% of the total annual food supply. The horticulture practiced is characteristic of tropical forest slash-and-burn gardens, with a slow rotation of plots in order to permit soil renewal and weed control. Trees are cut, at present with steel axes and formerly, apparently, with axes of bone or shell, and then burnt. Occasional fences are roughly made of the logs to keep out pigs. Bitter manioc (*Manihot utilissima*),[9] in several varieties, is the main crop, though sweet manioc (*Manihot aipi*), also in several varieties, is planted too, as are corn, bananas, sugar cane — each in several varieties — and a number of lesser crops such as melons, squashes, pumpkins, pineapples, sweet potatoes, and yautia or ocumo (*Xanthosoma sagittifolium*). Crops are planted with a digging stick which may also be used in harvesting. Gardens are weeded, once only, early in the growth of the crops. Other than clearing, the only soil preparation is the construction of hills for planting bananas. This is done by burning hills made by a certain species of ants (*huachaquero*). The hills, which are quite wide and low, are filled with organic matter enriching the soil.[10] Harvesting is aided with baskets for carrying the crops. Baskets contain about half a bushel or less. No fertilization, no terracing, no drainage, no irrigation, no extensive turning of the soil is done.

The gathered resources include a number of roots, particularly changuango, changuanito, and guapo (*Maranta arundinacea*);[11] varied fruits, especially that of

[8] Professor Benjamin N. Nelson informs me that in medieval Spain, village communities had an official, also called *capitan*, whose function was to treat with state functionaries representing the world beyond the village community's frontier. It is possible that the Yaruro capitan, and many others in Venezuela, are an acculturative transfer of this office to tribal groups. In the case of the Yaruro, this would have happened some 250—300 years ago.

[7] The use, here, of the terms 'activity', 'tasks', 'techniques', 'tools', 'resources', and 'habitat' corresponds to the definitions given in Leeds, 1960 b.

[8] Cf. Leeds, 1961, which gives this data in detail and describes the habitat and horticulture *in extenso*.

[9] Native terms for these crops are given *ibid.*

[10] *Ibid.*, note 9, contains data on soil values.

[11] Identifications are from Pittier, 1926.

sacre, the labor force actually observed in "my" group was a little more than 25% of that number, or 18, and neighboring groups were generally still smaller. These 154, 67, and especially the actual 18 workers, even if, at any given moment, *all* were working at subsistence activities, would be distributed over various parts of the 110 square miles of territory under the kind of dispersive habitat and technological conditions described. They are in fact so thinly scattered as to preclude any sort of continuing managerial functions.

V

A consideration of the forms of the harvest surplus[49] is relevant to our discussion. Harvest surpluses must be considered with respect both to individual subsistence resources and to all subsistence resources taken together. In the annual cycle, there is considerable variation in the amount produced of any given crop, except for sweet and bitter manioc which together constitute perhaps 40% of the annual food supply of the Yaruro. Manioc produces throughout the year. Given that the manioc-growing areas are widely dispersed and that considerable labor is drawn from manioc areas by still more dispersed resources, it follows that most work units for manioc gardens will consist of only one or two men, each having their own swidden or sharing it with one or two others to supply themselves and their immediate families throughout the year. As might be expected, land tenure and land usage patterns are in accord with this inference. Occasionally small oscillations in the manioc crops may produce small harvest surpluses. These, at least nominally, belong to the man in whose swidden they grow and are his for disposal. The quantities, however, are exceedingly small, and present no problems of storage or disposal necessitating more centralized supervision and allocation. Most other resources display a similar pattern though to an even smaller degree. Fish are obtainable, for the Cinaruco Yaruro, all year round with almost equal ease, though the Palmariteños have a more difficult time because of the grassy and muddy waters in the rainy season. Hunting windfalls and large pigs are the only animal sources which present harvest surpluses of any size. However, these are small enough so that they last at most two or three days, and they are so irregular both as to occurrence and as to personnel involved that no regular centralized institutional mode of handling them is entailed. The virtual absence of meat storage

For example, in the Trobriand Islands, in a good year, all the yams harvested cannot be eaten at once, nor can they be stored. Some portion of the crop is then lost by spoilage. We may construct, in terms of calories or other significant food values, two ratios:

$$\frac{C_h}{C_p} \qquad \frac{C_p}{C_h}$$

C — Calories
c — consumed
p — potential
h — harvested (= available for use)

[49] The first may be used as a measure of the efficiency of the productive capacity of the technology; the second as a measure of the efficiency of the distributive capacity of the technology.

[49] The technological, producers, and harvest surpluses are defined in Harris, 1958, and implied in Harris, 1959. They are dealt with in detail with respect to the Yaruro in Leeds, 1961. Other relevant discussions of surplus are found Sahlins, 1958; Jacobs and Stern, 1952, Ch VI.

3:Leeds E-5 (1958) 1962 SS19 Yaruro SS19

distance of the gardens is too far from the village for effective or efficient exploitation. At this point a village or part of a village must move. Moving the villages involves decision-making with respect to time, new location, and so on. Plainly, moving a village involves a community decision. A community institution for handling the decision-making is necessary. Technologically speaking, the moving itself is not a community task and does not involve supervision and direction. Therefore, one would not expect the institution of decision-making to be a directive one, but a consultative one. Again this corresponds to the observed modes of action of the Yaruro chiefs. The chiefs' function is to facilitate the formation of the decisions of the community by funnelling and interpreting individuals' feelings and expressions to the rest of the members of the community.

In sum, I have presented a model of a form of ecology which, hypothetically, determines the limits within which any sort of chiefly functions may operate. This model, again hypothetically, is applicable to all cultures having the kind of technological and habitat characteristics and forms of surplus here described. I think the model applies particularly to cultures which grow root-crops such as manioc, which utilize no labor-concentrative techniques, such as irrigation, and for whose food resources notable seasonality is absent. Such cultures have been noted widely in tropical South America and also in Melanesia. In both areas, chiefly functions are notably limited as contrasted, say, with Circum-Caribbean corn-raising cultures with some irrigation and other intensive techniques[24] and with Polynesian high cultures with elaborate irrigation and other public works.[25] It should be noted, first, that the Yaruro were not far from these Circum-Caribbean chiefdoms and even show a number of trait similarities, and, second, that the Yaruro have been under Spanish acculturation, which has involved encouragement of chiefly functions, for probably 250 years. Yet, despite the pressures of both diffusion and acculturation to produce a more developed chieftaincy, the attenuated form described persists. The explanation of this persistence seems to me to be ecological. I suggest that the model of explanation presented here is based on a set of analytic dimensions — the characteristics of the technology, those of the habitat, those of the harvest surplus, and the interrelationships of these — which may be used for all cultures, but whose formal, systemic relations vary from culture to culture, or class of cultures to class of cultures, thus giving different models for different cultures or classes of cultures. By using such dimensions, one can account for cultural differences by means of a standard set of principles, thus facilitating genuine comparisons and generalizations.

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[24] Cf. Sturtevant, 1961; Reichel-Dolmatoff, 1961.
[25] Cf. Sahlins, 1958.

7: Leeds E-4, 5. (1958) 1964 SS19 Yaruro SS19

constitute incest. I believe one can show from Petrullo's own genealogies that either incest occurred, possibly as a result of the process of depopulation, or that clan exogamy did not exist at all, since there were no clans, and the marriages concerned were not incestuous.

A third important feature that Petrullo asserts existed among the Yaruro is matrilateral cross-cousin marriage. Aside from the fact that, associated with the matriliny Petrullo's matriclans would possess, one would theoretically expect patrilateral cross-cousin marriage, if preferential cross-cousin marriage existed at all, I was unable to confirm unilateral cross-cousin marriage preferences but got statements of preference for bilateral cross-cousin marriage as well as reports of bilateral cross-cousin marriage and bilateral marriages between an ego and a parallel cousin's offspring.[2]

A fourth important feature discussed by Petrullo is totemism. The clans are assertedly connected respectively with the snake god Poanã and the jaguar god, Tió. Not only was I unable to confirm this, but the ethnographic evidence, on the whole, appears to contradict it directly. Totemism, for example, would be quite inconsistent with the social organization of the *toŋ'be* ceremony, the central socio-religious institution of the Yaruro which I have described elsewhere (1960, 1961 *b;* cf., also, Le Besnerais, 1951, 1950 *b*, and, with Dreyfus-Roche, 1954).

Thus we have not only ethnographic disagreement among three observers, but also the theoretical improbability of the original description which attaches matrilineal clanship to hunting and gathering nomadism, and to matrliateral cross-cousin marriage. Virtually all further published anthropological material on the Yaruro has taken the Petrullo report at face value. Some of these publications include a caveat about the report, but, unfortunately, others have, explicitly or implicitly, assumed its correcteness since they have used it as the starting point for historical, functional, or evolutionary reconstructions.[3]

Specifically the assertion is repeatedly made by Steward, Kirchhoff, and Steward and Faron that the Yaruro are one of a series of marginal tribes left over from an earlier wave of settlement and occupying interstitial areas among more advanced peoples. Steward (1946-1950, in various passages, esp. Vol. 5, pp. 678 *ff.*) tries to justify the marginal classification generally by designating characteristic traits present as well as those that should be absent. The Yaruro possess a large number of the latter, including horticulture, basketry, canoes,

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[2] The theoretical expectation of *patrilateral* cross-cousin marriage with matriliny is discussed in Homans and Schneider (1955, especially pp. 56-57) and elsewhere. The preference for bilateral marriage with cross-cousins or with offspring of parallel cousins is also found among the Jivaro (cf. Steward and Métraux, 1948, especially p. 626). This fact, with a great many similar traits of social organization and world view shared by the two cultures, is of considerable interest to the cultural origin of the groups discussed later in the paper where other parallels are mentioned.

[3] Cf. Kirchhoff, 1948, *a;* Steward, 1946-1950; Vol. 3, pp. 827-899; Vol. 5, pp. 669-679, *et passim;* Steward and Faron, 1959; Layrisse, *et al.*, 1961; Needham, 1960; Murdock, 1957.

7: Leeds E-4, 5 (1958) 1964 SS19 Yaruro SS19

significantly hunters and fishers. The distribution of these peoples suggests a geographical radiation from a common location that is implied as well by the relationships among the languages — probably from the west or southwest of present Yaruro country. Work on the centuries of separation, on the degrees of relationship of these languages among themselves and to other groups of the putative Andean-Equatorial family is urgently needed as is archeology in the supposed area of radiation.

Second, archeology would provide most interesting evidence. Petrullo (1939 *b*) collected a series of artifacts, mainly potsherds, which suggest a degree of culture well beyond minimal Tropical Forest level. Le Besnerais (Ms.) mentions not only the variety of potsherds to be found but also polished stone axes and funerary urns (cf., also, Vernau, 1901). I myself saw an immense number of crude, friable, slipped potsherds; many potsherds generally of the Arauquín type; a polished stone celt; a polished stone mano, beautifully made (cf. photo), and so on. None of these objects, except the crude potsherds, have been found in situ, but the Indians assert that they dig them up all the time.

The archeological items would suggest that cultures previously in the area, whether Yaruro or not, were horticultural. Though no archeology of any kind has been done in the South Venezuelan llanos, these meager indications suggest that the Kirchhoff-Steward hypothesis is erroneous since the Yaruro of our times could not be a remnant of aboriginal hunters and gatherers if the area was previously at a much higher cultural level. The general hypotheses of Cruxent and Rouse (1958-1959: 263 *ff.*) — especially that relating to a fusion between a western corn area and an eastern manioc area — would further tend to cast doubts on the whole Handbook scheme since the obvious routes for this fusion to have taken place are the great east-west llanos rivers. Archeological work is desperately needed here, and seems to me of central theoretical importance. It is hard to understand why so many workers have skirted the area.[5]

Before turning to written history I wish to take up some minor lines of evidence which are suggestive for the resolution of the ethnographic discrepancies. One has to do with the content of the ideology. Quite a number of items such as the earth mother, the ancestor cult, the serpent rainbow, the anaconda god, and so on (cf., Antolínez, 1939; Steward and Métraux, 1948, esp. p. 628; etc.), appear to connect the Yaruro with tribes to the west and southwest including the Chibcha and the Jívaro.

[5] No one has done systematic work in the llanos. Only sporadic finds have been made there (e. g., Petrullo, 1939 *b;* Vernau, 1901). The intensive archeological fieldwork has all been in the great circle around the llanos (cf. a great many works by Cruxent cited in Cruxent and Rouse, 1958-1959; Evans and Meggers, n.d.; Howard, 1943; Kidder, 1944; Marcano, 1893; Meggers and Evans, 1955; Osgood, 1943; Osgood and Howard, 1943; Rouse, 1956; Rouse and Cruxent, 1957, and many other Rouse articles listed in Cruxent and Rouse, 1958-1959. Cf., also, unpublished work by P. Gallagher, by M. Sanoja, and by E. Wagner.